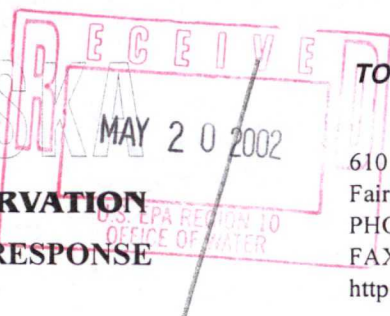


12774

STATE OF ALASKA



TONY KNOWLES, GOVERNOR

**DEPT. OF ENVIRONMENTAL CONSERVATION  
DIVISION OF SPILL PREVENTION AND RESPONSE  
CONTAMINATED SITES PROGRAM**

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File: 102.26.055

May 10, 2002

David Raubvogel, Senior Geologist  
URS  
1400 Century Square  
1501 Fourth Avenue  
Seattle, WA 98101

Re: N.C. Machinery Facility, Fairbanks, AK – Insitu Chemical Oxidation Workplan  
URS Job No. 53-26450002.00

Dear Mr. Raubvogel:

Thank you for the URS workplan titled *Supplemental Investigation and Corrective Action Plan* dated August 23, 2001. This letter is a follow-up to the Alaska Department of Environmental Conservation's (ADEC) letter dated August 29, 2001 and our telephone conversation on Monday, May 6, 2002. The following lists the comments and questions concerning the implementation of the pilot scale and full-scale use of In Situ Chemical Oxidation (ISCO).

ADEC encourages the appropriate and applicable use of innovative technology such as OxVac™ in site remediation. Rather than providing a blanket approval for the entire workplan, ADEC will approve a phased approach in implementing the technology as outlined in the August 2001 workplan. The batch studies were approved in ADEC's August 29, 2001 letter. The intent of this letter is to approve the pilot study upon satisfactory resolution of ADEC's comments and questions. Full-scale use will be considered after ADEC has reviewed and discussed the results of the pilot study.

ADEC has limited experience in reviewing and approving ISCO. There is no state-issued guidance at this time. The Interstate Technology and Regulatory Cooperation Work Group (ITRC) guidance titled *Technical and Regulatory Guidance for In Situ Chemical Oxidation of Contaminated Soil and Groundwater* dated June 2001 was used as the basis of our review. This document may be downloaded from ITRC at <http://www.itrcweb.org/>.

1) Potential for Gas Evolution

What is the potential for gas evolution because of the exothermic nature of the reaction? Specifically, is there the possibility for the evolution of chlorinated volatile organic compounds (VOC), components of the diesel range organics (DRO), or molecular oxygen to the extent that the lower explosive levels could be attained within the enclosed shop area?

1-58-5x-00044



Indoor air quality monitoring may be necessary during the pilot study. If the potential for gas evolution is significant, then it may be necessary to monitor water and sewer line easements or any other preferential gas pathways to enclosed areas either on or off site.

2) Potential for Resolubilization and transport of Metals

There appears to be limited soil and groundwater data concerning metals. Contamination from either waste oil tank releases or dry wells is now typically analyzed for arsenic, barium, cadmium, total chromium (speciation is required if total chromium concentration exceeds the hexavalent chromium level for the specific climatic zone), lead, nickel, and vanadium.

What is the potential for the resolubilization of the above metals? Groundwater samples for metals should be collected in the monitoring wells closest to the injection wells during the pilot study to evaluate the potential for the mobilization of metals. These results can be compared to the U.S. Army Corp of Engineers Alaska District report titled *Background Data Analysis for Arsenic, Barium, Cadmium, Chromium, & Lead on Ft. Wainwright, Alaska* dated March 1994. ADEC has used this report to establish the 95 percent upper confidence level for background metals concentrations in both soil and groundwater.

If the mobilization of metals is significant, additional groundwater samples may be necessary from wells further downgradient. Such samples would be collected after the pilot study, allowing sufficient time for travel between the injection well and downgradient wells.

3) Coordination of Site Health & Safety Plan with N.C. Machinery Operations

It is strongly recommended that operational management of N.C. Machinery be an integral part of the Site Health and Safety Plan. ADEC requires a health and safety plan at remedial sites, however, the appropriateness of the plan adequacy for meeting local, state, and federal fire, safety, and transportation requirements is the responsibility of the user.

4) Determination of Contaminant Mass Loss

Soil samples should be collected following the pilot study and after the full-scale study to estimate the contaminant mass lost. To reduce costs, post pilot study samples may be collected during the installation of the injection wells for the full-scale study. A limited number of soil samples will be necessary following full-scale treatment. Pre and post treatment soil samples along with the proposed groundwater sampling will provide two lines of evidence for site closure.

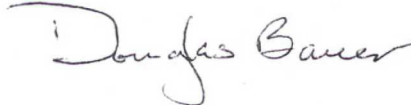
ADEC approves the pilot study workplan once the above concerns are addressed. It may be beneficial to have a teleconference with Terra Vac once the batch study results are available.

Once the pilot study is complete, ADEC needs to review the results from the pilot study and the conceptual design for the full-scale project. This information can be transmitted in a short letter report and should summarize the findings and conclusions from the batch and pilot studies. ADEC recognizes that the final full-scale design may have to be modified on site so a conceptual full-scale design will be adequate.

Alaska does not have primacy for the Underground Injection Control (UIC) program. An injection well used in site remediation is a Class V injection well. Since the URS workplan was previously forwarded to Mr. Jonathan Williams with the EPA Region 10 UIC program, the three injection wells for the pilot study will need registration with EPA per the completion of the appropriate form.

If you have any questions or need additional information, please contact me.

Sincerely,



Douglas Bauer  
Environmental Engineer Associate

cc: Jonathan Williams, EPA/Region 10 UIC program  
John Carnahan, ADEC/Fairbanks